REMARKS

Introduction

By this Response, applicant has deleted the text added to the specification beginning on page 31 via the RESPONSE TO THE NON-FINAL OFFICE ACTION OF MARCH 18, 2004[1]. Applicant has also cancelled claims 84 and 91-96. Further, applicant hereby submits along with this Response the AFFIDAVIT OF RUSSEL L. YECKLEY dated April 19, 2005 (Yeckley Declaration II). The amendments to the specification and the Listing of Claims set forth above are in compliance with 37 CFR 1.121 and MPEP 714 (Rev. 2 May 2004).

For the most part, applicant's arguments for patentability are based on the independent claims. To the extent that the arguments are silent about the corresponding dependent claims under rejection, applicant submits that the corresponding dependent claims are patentable for the reasons advanced in support of the patentability of the corresponding independent claim.

During the prosecution of U.S. Patent No. 6,693,054 B1 to Yeckley (the parent patent to the present patent application) applicant submitted a DECLARATION OF RUSSEL L. YECKLEY signed on June 5, 2003 (hereinafter Yeckley Declaration I). A copy of this Yeckley Declaration I was an attachment (EXHIBIT 1) to the RESPONSE TO THE NON-FINAL OFFICE ACTION OF MARCH 18, 2004. In the Yeckley Declaration I, the inventor presented his opinions about certain ones of the applied patents, and from time-to-time in this Response, applicant will refer to the Yeckley Declaration I.

Finally, applicant points out that the x-ray diffraction data presented in the Yeckley Declaration II shows that the beta silicon nitride content in the starting silicon nitride powder makes a difference in the resultant ceramic. This data shows that even though the compositions are the same, except for the beta silicon nitride content, the amount of alpha SiAlON phase in the two phase composite, the composition of the alpha SiAlON phase itself, the composition of the beta SiAlON phase itself, and the ytterbium content in the grain

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[1] Applicant disagrees with the Primary Examiner's opinion that the text previously added to the specification was new matter; however, in an effort to advance this application to issuance, applicant has complied with the Primary Examiner's request to delete this text.

boundary are impacted by the content of the beta silicon nitride in the starting silicon nitride powder. This kind of evidence addresses the issues raised by the Primary Examiner's citations of In re Spada, 911 F.2d 705,15 USPQ2d 1655 (Fed. Cir. 1990); In re Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); and In re Swinehart, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

Rejections under 35 USC §112

Although application disagrees with the Primary Examiner's position, applicant has amended claims 61, 67 and 74 (claim 93 has been cancelled) to read that the starting silicon nitride powder "contains about one hundred percent alpha silicon nitride". Applicant submits that that these amendments overcome the rejection and solicit the removal thereof.

Rejection of Claims Over Chen et al.

Claims 51-58, 61-64, 73-75 and 78-96[2] stand rejected under 35 USC § 102(b), or in the alternative under 35 USC § 103(a), over Chen et al. (U.S. Patent No. 5,908,798). Applicant respectfully disagrees with this rejection for the reasons set forth hereinafter. Each one of the independent claims under this rejection recite that the silicon nitride powder in the starting powder mixture contains beta-silicon nitride powder wherein the beta-silicon nitride powder comprises less than or equal to about 1.6 weight percent of the starting silicon nitride powder (or zero weight percent beta-silicon nitride).

Chen et al. discloses a starting silicon nitride powder that has a high beta silicon nitride content. This is shown by the description found at Col. 5, lines 5-51. In particular, the silicon nitride starting powder is beta silicon nitride that comprises 93 weight percent beta silicon nitride and 7 weight percent alpha silicon nitride. The use of such a silicon nitride starting powder is just the opposite of the present invention that claims a starting silicon nitride that has a beta silicon nitride content that is: (1) less than or equal to about 1.6 weight percent of the silicon nitride starting powder (see claims 51 and 71) or (2) about zero beta

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[2] Claims 84, and 91-96 have been cancelled so that the rejection of these claims is moot.

silicon nitride content (see claims 61 and 74). At Paragraph 24, Yeckley Declaration I supports the position that Chen et al. does not address the present invention.

Even though the claims pertain to a ceramic body, the recitations about the beta silicon nitride content in the starting silicon nitride powder are positive claim recitations that the Primary Examiner must consider in the patentability analysis. See MPEP 2143.03 (Rev. 2, May 2004) at page 2100-133; In re Wilson, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970); In re Sabatino, 480 F2d 911, 178 USPQ 357 (CCPA 1973).

Applicant respectfully requests the removal of the above rejections for the reasons expressed above.

Rejection of Claims Over Tien et al.

Claims 51-53, 60, 61 and 62 stand rejected under 35 USC § 102(a or e) in light of Tien et al. (U.S. Patent No. 6,124,225). Applicant respectfully submits that this rejection lacks merit for the reasons expressed hereinafter. Each one of the independent claims under this rejection recite that the silicon nitride powder in the starting powder mixture contains beta-silicon nitride powder wherein the beta-silicon nitride powder comprises less than or equal to about 1.6 weight percent of the starting silicon nitride powder (or zero weight percent beta-silicon nitride).

Tien et al. appears to disclose the UBE-10 silicon nitride powder and a preferred silicon nitride starting powder that contains 95 weight percent alpha silicon nitride and 5 weight percent beta silicon nitride. See Col. 4, lines 50-65. The UBE-10 silicon nitride powder appears to contain 2 weight percent beta silicon nitride[3], and hence, does not address the instant invention per these claims, and the same is true for the above-mentioned preferred silicon nitride powder.

Applicant requests the removal of the above rejections for the reasons stated above.

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[3] See Paragraph 23 of Yeckley Declaration I that discloses that UBE-10 silicon nitride powder contains 2 weight percent beta silicon nitride.

Rejection of Claims Over JP'333 and/or Tanase et al.

Claims 51-58, 61-75, and 78-96[4] stand rejected under 35 USC § 102(b), or in the alternative under 35 USC § 103(a), over Japanese Patent Document 5-43333 (JP '333) and Tanase et al. (U.S. Patent No. 4,547,470), each taken alone. Applicant disagrees with this rejection for the reasons set forth below.

Each one of the independent claims under this rejection recite that the silicon nitride powder in the starting powder mixture contains beta-silicon nitride powder wherein the beta-silicon nitride powder comprises less than or equal to about 1.6 weight percent of the starting silicon nitride powder (or zero weight percent beta-silicon nitride).

In JP '333 the silicon nitride powder is described as "α'-silicon nitride (UBE Industries)", but there is no disclosure of properties or specific composition of the powder. Thus, the disclosure in JP'333 gives no guidance as to the beta silicon nitride content of this powder. However, the disclosure of the physical properties of the resultant ceramics in JP'333 (especially in view of the low α'-SiAlON phase contents) provide evidence that the starting silicon nitride powder contains a higher beta silicon nitride content on the order of greater than or equal to about 2 weight percent beta silicon nitride. In this regard, Table A sets out the starting materials and properties for these three examples.

Table A
Starting Materials and SiAlON Phases for Examples 4 and 1924D

Ex	Si_3N_4	Al_2O_3	AlN	Yb-Containing	α'-Phase	β'-Phase
4	88.0	1.4	4.5	6.1	23% [25wt% of α'-SiAlON and β'-SiAlON phases]	69% [75wt% of α'-SiAlON and β'-SiAlON phases]
1924D	86.8	2.5	4.5	6.2	41.7%	58.3

Referring to Paragraph 26 of Yeckley Declaration I, if the starting silicon nitride powder for Example 4 of JP '333 was a low beta silicon nitride, it would be expected that the

[4] Claims 84 and 91-96 have been cancelled so that the rejection of these claims is moot.

alpha prime SiAlON content for Example 4 would be greater than that for Batch 1924D since the alumina content for Batch 1924D is greater than that of Example 4. This is because the presence of alumina typically results in a lower alpha prime SiALON content. However, the alpha prime SiAlON content for Batch 1924D is actually greater than that of Example 4. As summed up in the last sentence of Paragraph 26, "[I]n my opinion, this difference in the alpha prime SiAlON content shows that the UBE silicon nitride powder used in JP'333 contained at least 2 weight percent (and possibly more than 2 weight percent) beta-silicon nitride."

In light of the above discussion, applicant submits that JP '333 does not address the present claims. See Paragraph 27 of Yeckley Declaration I which reads:

> 27. In light of the alpha prime SiAlON content and the nature of the starting silicon nitride powder for Examples 4 and 9 of JP'333, it is my opinion that the resultant ceramic of JP'333 would not present an unexpected increase in the alpha prime SiAlON phase content or present an unexpected elongation of the beta prime SiAlON phase grains so as to achieve an unexpected increase in the hardness and the fracture toughness of the ceramic material.

In regard to Tanase et al., this patent recites that the starting silicon nitride powder contains 10 volume percent beta silicon nitride and 90 volume percent alpha silicon nitride. For silicon nitride, the volume percent is about equivalent to the weight percent. Hence, Tanase et al. discloses that the starting silicon nitride powder contains about 10 weight percent beta silicon nitride. In light of the starting silicon nitride powder, Tanase et al. does not address the present invention for the reason that Tanase et al. does not teach or suggest the use of a low beta silicon nitride starting powder. It is apparent that Tanase et al. does not address the present invention.

Applicant solicits the removal of the above rejections for the reasons expressed above.

Rejection of Claims Over JP'966

Claims 51-75 and 78-96[5] stand rejected under 35 USC § 102(b), or in the alternative under 35 USC § 103(a), over Japanese Patent Document 2988966. Applicant respectfully submits that these rejections lack merit for the reason set forth hereinafter. Each one of the independent claims under this rejection recite that the silicon nitride powder in the starting powder mixture contains beta-silicon nitride powder wherein the beta-silicon nitride powder comprises less than or equal to about 1.6 weight percent of the starting silicon nitride powder (or zero weight percent beta-silicon nitride).

JP'966 uses a starting silicon nitride powder that contains 7 weight percent beta silicon nitride. As demonstrated by the patent specification and the test data reported in the Yeckley Declaration, the use of a silicon nitride powder that contains on the order of 7 weight percent beta silicon nitride powder will not achieve the present invention. Along this line, Paragraph 22 of Yeckley Declaration I reads:

> 22. After a review of JP '966, it is my opinion that primarily due to the use in JP '966 of a starting silicon nitride powder that has about 7 weight percent beta silicon nitride (i.e., α-silicon nitride conversion of 93%), the resultant ceramic of JP '966 would not present an unexpected increase in the alpha prime SiAlON phase content or present an unexpected elongation of the beta prime SiAlON phase grains so as to achieve an unexpected increase in the hardness and the fracture toughness of the ceramic material.

In addition, JP'966 does not present any disclosure about the alpha prime SiAlON content or the fracture toughness or the hardness.

Applicant solicits the removal of this rejection for the reasons expressed above.

[5] Claims 84 and 91-96 have been cancelled so that the rejection of these claims is moot.

Rejection of Claims Over Yamada et al. and/or Yoshimura et al

Claims 51-75 and 76-98[6] stand rejected under 35 USC § 102(b), or in the alternative under 35 USC § 103(a), over Yamada et al. (U.S. Patent No. 5,200,374) and Yoshimura et al. (U.S. Patent No. 5,369,065) each taken alone. Applicant respectfully submits that the rejections lacks merit for the following reasons. Each one of the independent claims under this rejection recite that the silicon nitride powder in the starting powder mixture contains beta-silicon nitride powder wherein the beta-silicon nitride powder comprises less than or equal to about 1.6 weight percent of the starting silicon nitride powder (or zero weight percent beta-silicon nitride).

Yamada et al. uses starting silicon nitride powders that all have beta silicon nitride contents greater than or equal to 2 weight percent beta silicon nitride. Yamada et al. does not address the low beta silicon nitride aspects of the claims. In this regard, See Paragraph 23 of Yeckley Declaration I. In light of the nature of the starting powders of Yamada et al., applicant opines that the resultant product would not produce the instant invention. Paragraph 23 of Yeckley Declaration I reads [in part]:

> … that because of the nature of the starting powders used in US '374; namely, an α-SiAlON powder and the above-mentioned silicon nitride powders, it is my opinion that the resultant ceramic of US '374 would not present an unexpected increase in the alpha prime SiAlON phase content or present an unexpected elongation of the beta prime SiAlON phase grains so as to achieve an unexpected increase in the hardness and the fracture toughness of the ceramic material.

Applicant submits that Yamada et al. does not address the claims under rejection.

Yoshimura et al. appears to teach the use of a starting silicon nitride powder that comprises 93% alpha silicon nitride and 7% beta silicon nitride. See Example 1 found at Col. 5, lines 37-41. Applicant submits that Yoshimura et al. does not teach or suggest the invention per the claims under rejection.

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[6] Claims 84 and 91-96 have been cancelled so that the rejection of these claims is moot.

Applicant solicits the removal of these rejections for the reasons set out above.

Provisional Double Patenting Rejection

In regard to the provisional double patenting rejection, applicant has included herewith a Terminal Disclaimer to Obviate a Provisional Patenting Rejection Over a Pending "Reference" Patent Application.

Comments on the Yeckley Declaration II

Applicant submits that the Yeckley Declaration II clearly demonstrates that the beta silicon nitride content has an impact on the resultant ceramic. The additional analysis of Examples 8, 9, 10 and 11 as presented in the Yeckley Declaration II establishes such an impact. See Paragraphs 9-15 of the Yeckley Declaration II. Applicant's position is consistent with the thrust of the Examiner's comments at page 4 of the Office action regarding the differences between the claimed product and the prior art.

Applicant believes that Examples 8 and/or 9 are within the scope of all the now pending claims, except for claims 55, 66, 69, 78-81, 83, and 85-90. Applicant is of the opinion that the differences in principle between the resultant ceramics of Examples 8 and 9 as compared to Examples 10 and 11 would exist for corresponding examples within the scope of these claims 55, 66, 69, 78-81, 83, 85-90. This is addressed in more detail in Paragraphs 16 through 19 of the Yeckley Declaration II. More specifically, Paragraph 16 addresses claims 55 and 69. Paragraph 17 addresses claim 66. Paragraph 18 addresses claims 78-81. Paragraph 19 addresses as amended claims 83 and 85-90.

CONCLUSION

In conclusion, applicant submits that the pending claims are patentable over the applied patent documents. Applicant respectfully requests the removal of the rejections and the issuance of a Notice of Allowability and Notice of Issue Fee Due.

If the Primary Examiner should disagree with all or part of applicant's position set forth herein and have suggestions to place the claims in form for allowance, applicant urges

the Primary Examiner to telephone either the undersigned attorney (615-662-0100) or Mr. John J. Prizzi, Esq. (724-539-5331).

Respectfully submitted,

Stephen T. Belsheim
Reg. No. 28,688

179 Belle Forrest Circle Suite 102
Nashville, Tennessee 37221
Telephone 615 662 0100
Facsimile 615 662 0352

Date: April 26, 2005

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PATENT
K-1688C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of: Yeckley	)	
	)	GROUP ART UNIT 1755
Serial No. 10/679,924	)	
Filed: October 6, 2003	)	Examiner: Karl Group
For: **SiAlON Containing Ytterbium**	)	
And Method of Making	)	

CERTIFICATE OF TRANSMISSION

I certify that this correspondence is, on the date shown below, being transmitted by facsimile to the United States Patent and Trademark Office at facsimile telephone number 1-703-872-9306

Date: APRIL 26, 2005

Signature:

Name of Person Certifying: Stephen T. Belsheim

DECLARATION OF RUSSELL L. YECKLEY

I, RUSSELL L. YECKLEY, do hereby declare as follows:

1. I am over the age of twenty-one (21) years and am a citizen of the United States of America and a resident of the Commonwealth of Pennsylvania.

2. I am the inventor of the above-captioned pending U.S. Patent Application, that I am an employee of Kennametal Inc., the assignee of the above-captioned patent application, and that I am making this Declaration on behalf of Kennametal Inc.

3. My post-high school educational background is as follows: in 1976 I received a B.S. in Ceramic Engineering from Penn State University and in 1984 I received a M.S. in Materials Engineering from the University of Pittsburgh.

4. Since 1979 I have been employed in various positions pertaining to the development and/or production of ceramic materials such as SiAlON materials and silicon nitride materials.

5. That in an effort to demonstrate the merits of the invention described and claimed in the above-captioned patent application, at my request further analysis of certain samples was performed to determine lattice parameters using the following equipment at the following operating conditions:

(a) the samples were in powder form and were prepared for analysis by adding a small amount of NIST (National Institute of Standards and Testing) silicon metal powder,

(b) the NIST silicon metal powder is a certified standard material that is used to correct the peak position calculations for errors in instrument alignment, and this powder blend, i.e., the powder blend of the sample powder and the NIST silicon metal powder, was mixed with an organic binder and acetone to form a slurry,

(c) the resulting slurry was affixed to a glass slide and then allowed to dry,

(d) diffraction data was collected:

(1) using standard Braggs optics minimized for peak resolution,

(2) using as a minimum a 0.008 degrees step in the range of 75 degrees to 135 degrees wherein these step positions were selected so as to maximum the accuracy of the peak position determination,

(3) for four seconds at each step,

(e) collected diffraction data was first corrected for instrument error using the NIST silicon reference pattern,

(f) precise diffraction peak positions were determined by fitting a pseudo-Voight function to the collected data,

(g) lattice parameters for each of the SiAlON phases were determined from the peak positions by using a "least squares" method, and

(h) the resultant parameter errors are set forth in parenthesis for the alpha prime SiAlON phase and the beta prime SiAlON phase of each example.

6. That Yeckley Declaration II - Table A below sets forth the results of these lattice parameter measurements where these lattice parameters measurements have an

error of ± .0001, except where indicated by an asterisk (*) that shows no error in the measurement.

Yeckley Declaration II – Table A
Results of Lattice Parameter Measurement for Samples 982, 1145A, 1145B and 1374D

Sample	Beta Silicon Nitride Content (wt.%)	Alpha Lattice Parameter "a"	Alpha Lattice Parameter "c"	Beta Lattice Parameter "a"	Beta Lattice Parameter "c"	X Value	m Value (3·x)	z Value
1145A	6%	7.7977	5.6759	7.6204	2.9198*	0.354	1.063	0.478
1145B	2%	7.7928	5.6711	7.6203	2.9201*	0.321	0.963	0.487
982	1.5%	7.7927	5.6706	7.6201	2.9197	0.319	0.957	0.475
1374D	0%	7.7875	5.6665	7.6223	2.9215	0.287	0.860	0.542

7. That Yeckley Declaration II – Table B below sets forth the following: (a) the content of the alpha SiAlON phase in weight percent of the two phase composite (i.e., the alpha SiAlON phase and the beta SiAlON phase), (b) the formula of the alpha SiAlON phase, and (c) the ytterbium content (in moles) contained in the grain boundary for the four samples of Table 13.

Yeckley Declaration II - Table B
The Content of Alpha SiAlON Phase in the Two-Phase Composite, the Formula of the Alpha SiAlON Phase and the Ytterbium Content (in moles) Contained in the Grain Boundary
for Samples 982, 1145A, 1145B and 1374D

Sample/ % Beta in the Starting Silicon Nitride Powder	Weight % alpha SiAlON	Formula for Alpha SiAlON	Moles of Yb in the Grain Boundary
1145A [6%]	37.7 %	$Yb_{0.35}Si_{10.01}Al_{1.99}O_{0.93}N_{15.07}$	0.0282
1145B [2%]	42.7 %	$Yb_{0.32}Si_{10.15}Al_{1.85}O_{0.88}N_{15.11}$	0.0277
982 [1.5%]	47.1 %	$Yb_{0.32}Si_{10.38}Al_{1.62}O_{0.87}N_{15.13}$	0.0263
1374D [0%]	62.7 %	$Yb_{0.29}Si_{10.48}Al_{1.52}O_{0.66}N_{15.34}$	0.0217

8. That referring to Yeckley Declaration II - Table B, the formula for alpha SiAlON phase is $Yb_xSi_{12-(m+n)}Al_{(m+n)}O_nN_{16-n}$ and the formula for beta SiAlON phase is $S_{6-z}Al_zO_zN_{8-z}$ wherein the values of "x" and "z" are calculated from the lattice parameters

measurements using the following formula: $a=7.75+0.139x$ and $c=5.62+0.153x$, units are in angstroms, and the equations are from Z.Shen, T. Ekstrom, and M. Nygren, Ytterbium-Stabilized α-sialon ceramics, J. Phys. D: Appl. Phys. 29 (1998); that the value of "m" is equal to three times the value of "x"; that the value of "n" is estimated from calculations based upon the overall composition of the alpha SiAlON phase, the phase density of the alpha SiAlON phase, the sintered density of the alpha SiAlON phase, the "z" value, and the beta SiAlON content from the x-ray diffraction results; and that these calculations are as described as follows: $a=7.60442+0.03z$ and $c=2.90751+0.027z$.

9. That referring to the results set forth in Yeckley Declaration II - Table A and Yeckley Declaration II - Table B, in its broader aspects it is apparent that there exists a relationship between the content of beta silicon nitride in the silicon nitride starting powder and each one of the following: (a) the amount of alpha SiAlON phase that is present in the alpha-beta SiAlON ceramic material, (b) the composition of the overall alpha-beta SiAlON ceramic material including the composition of the alpha SiAlON phase and the composition of the beta SiAlON phase, and (c) the composition of the grain boundary including the rare earth content (e.g. ytterbium) in the grain boundary.

10. That in regard to the alpha SiAlON content of the alpha-beta SiAlON ceramic material, the results show a continual increase in the alpha SiAlON phase content in response to a decrease in the beta content of the silicon nitride starting powder; and that the increase in the alpha SiAlON phase content becomes more dramatic as the beta content moves closer toward the 0 weight percent level as is especially shown by the increase of about 5 weight percent in the alpha SiAlON phase (from 42.7 weight percent to 47.1 weight percent) as the beta content decreases from 2 weight percent to 1.5 weight percent, and by the increase of about 15 weight percent in the alpha SiAlON phase (from 47.1 weight percent to 62.7 weight percent) as the beta content decreases from 1.5 weight percent to 0 weight percent.

11. That in regard to the rare earth content in the alpha SiAlON phase, the results show a continual decrease in the rare earth content in the alpha SiAlON phase in response to a decrease in the beta content of the silicon nitride starting powder; and that the increase in the alpha SiAlON phase content becomes more dramatic as the beta content moves closer toward the 0% level as is especially shown by the decrease of 0.32 moles to 0.29 moles (about a 9.4 percent decrease) of ytterbium in the alpha SiAlON phase as the beta content decreases from 1.5 weight percent to 0 weight percent of the starting silicon nitride powder.

12. That it can also be appreciated that the contents of the other elements in the alpha SiAlON phase change in response to the beta content of the silicon nitride starting powder; and that in response to a decrease in the beta content of the silicon nitride starting powder, the silicon and nitrogen contents increase and the aluminum and oxygen contents decrease.

13. That in regard to the rare earth (i.e., ytterbium) content in the grain boundary, the results show a continual decrease in the rare earth content in the grain boundary in response to a decrease in the beta content of the silicon nitride starting powder; that the decrease in the rare earth content becomes more dramatic as the beta content moves closer toward the 0% level; and that this is especially shown by the decrease of 17.5 percent in the mole content of the ytterbium in the grain boundary as the beta content decreases from 1.5 weight percent to 0 weight percent.

14. That it is also the case that the content of beta silicon nitride in the silicon nitride starting powder impacts the beta SiAlON phase wherein the starting silicon nitride powder that had no beta silicon nitride formed a beta SiAlON phase with a higher "z" value; and that in this regard, the "z" value of the beta SiAlON phase that was formed

from a silicon nitride starting powder that did not have any beta phase was 0.542, which was 11.3 percent greater than the "z" value of a beta SiAlON phase formed from a starting silicon nitride powder that had a 2 weight percent beta content.

15. That it can thus be seen that the content of beta silicon nitride has an impact on aspects that influence properties of the alpha-beta SiAlON ceramic, and hence, impact the performance of the alpha-beta SiAlON ceramic product as, for example, a cutting tool; and that more specifically, these changes affect the thermal conductivity, thermal expansion and Young's Modulus of the ceramic, and these properties influence the performance of a cutting tool.

16. That in my opinion, a comparative analysis of Example 12 (of the above-captioned patent application) against examples that would be processed the same as Example 12 and would have the same content of silicon nitride, aluminum nitride, aluminum oxide, and ytterbium, except that the starting silicon nitride powder would contain 2 weight percent beta silicon nitride and 8 weight percent beta silicon nitride, would show differences along the same general lines as the differences between Example 9 as compared to Examples 10 and 11, respectively.

17. That a comparative analysis of Example 14 (of the above-captioned patent application) against examples that would be processed the same as Example 14 and would have the same content of silicon nitride, aluminum nitride, aluminum oxide, and ytterbium, except that the starting silicon nitride powder would contain 2 weight percent beta silicon nitride and 8 weight percent beta silicon nitride, would show differences along the same general lines as the differences between Example 8 as compared to Examples 10 and 11, respectively.

18. That the same differences in the substrates exist for Examples 8 and 9 as compared with Examples 10 and 11 even if Examples 8 through11 were coated with any of the coating schemes called for in claims 78-81.

19. That in my opinion, a comparative analysis of any example that would be within the scope of any one of claims 83 and 85-90 (as amended to limit the two or more rare earths to ytterbium, erbium, thulium, scandium and lutetium) against examples that would have the same content of components, except that the starting silicon nitride powder would contain 2 weight percent beta silicon nitride and 8 weight percent beta silicon nitride, would show differences along the same general lines as the differences between Examples 8 and 9 as compared to Examples 10 and 11.

DECLARANT SAYS NOTHING FURTHER

All statements made of my own knowledge are true and all statements made on information and belief are believed to be true. I have been warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 USC1001) and may jeopardize the validity of this application or any patent issuing thereon.

Date 19 April 05

Russell L. Yeckley